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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,140	09/26/2003	Michael B. Timmons	1153.066US2	8068
21186	7590	06/14/2006	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.			POPOVICS, ROBERT J	
P.O. BOX 2938			ART UNIT	
MINNEAPOLIS, MN 55402			PAPER NUMBER	
			1724	

DATE MAILED: 06/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/672,140	Applicant(s) TIMMONS, MICHAEL B.	
	Examiner Robert J. Popovics	Art Unit 1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 37-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 37-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/11/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Claim Rejections - 35 USC § 103***

Claims **1-14** and **37-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of **AAPA (Applicant's Admitted Prior Art)** in view of either of **Greeleaf (US Patent No. 3,312,348)** and/or **Schulz (US Patent No. 5,032,294)**.

AAPA teaches:

BACKGROUND

[0002] Raising fish in water recirculating systems requires nitrification treatment systems that maintain acceptable levels of ammonia and nitrite within a water supply. A water recirculating system needs to be able to oxidize an ammonia load that is generated by fish as a result of daily fish feedings.

[0003] FIG. 1 illustrates one type of prior art filtration system 10 that maybe used in a water recirculating system. The filtration system 10 includes a chamber 12 that contains microbeads 14. Microbeads 14 are sufficiently buoyant such that they float on top of filtered water 16 that collects in the bottom of chamber 12. The microbeads 14 on the bottom are partially submerged in filtered water 16 because they support the weight of the microbeads 14 located above them.

[0004] Contaminated water 18 is delivered to filtration system 10 from a number of potential sources, including fish raising tanks where the water supply is contaminated with unsatisfactorily high ammonia loads. Contaminated water 18 is supplied to chamber 12 from above microbeads 14 using any method that uniformly distributes contaminated water 18 over microbeads 14, such as nozzles 13 arranged in a uniform pattern. Gravity forces contaminated water 18 downward through microbeads 14 where it collects in the bottom of chamber 12. Contaminated water 18 applies a force to microbeads 14 as it impacts microbeads 14 such that contaminated water 18 submerges some additional microbeads 14. An exit pipe 20 circulates filtered water 16 back to the contaminated water source.

[0005] Microbeads 14 provide a substrate for bacterial growth during operation of filtration system 10. The bacteria on

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microbeads 14 utilize the ammonia and nitrite as nutrients for even further bacterial growth. The bacterial growth on microbeads 14 also tends to reduce the buoyancy of microbeads 14. Heterotrophic bacteria living on the same beads utilize fine organic solids as nutrients for growth resulting in water polishing and general improvement in water quality.

[0006] One disadvantage of using a system 10 that includes microbeads 14 is that such systems are limited in size. In systems with large chambers, the strong buoyancy of microbeads 14 causes microbeads 14 to short circuit the flow of water through microbeads 14 in some areas of the chamber. Short circuiting the flow of water through microbeads 14 inhibits the ability of the bacteria on microbeads 14 to oxidize ammonia loads in the water passing through microbeads 14.

[0007] The size limitations associated with conventional filtration systems that include microbeads makes it necessary to utilize several chambers when oxidizing commercial ammonia loads (e.g., 9 kilograms TAN per day) that are generated from commercial fish feedings (e.g., 300 kilograms per day). The large number of chambers that are required to handle commercial ammonia loads adds unwanted expense to systems that include microbeads 14.

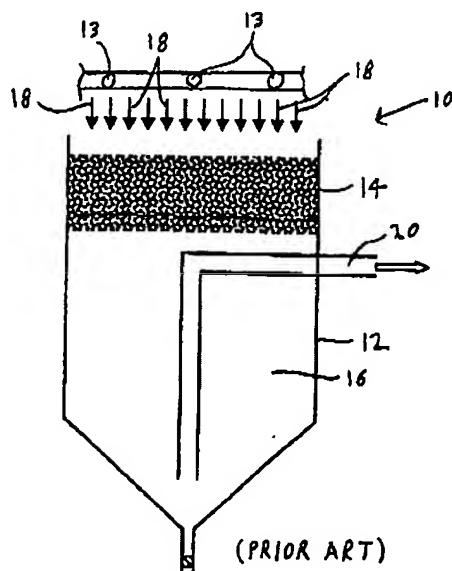


FIG. 1

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The three independent claims presently under consideration are:

Claim 1. A filtration system comprising:
a chamber that includes a hydraulic loading area extending across the entire chamber, the hydraulic loading area being divided into a plurality of cells with smaller hydraulic loading areas; and
filter media positioned in each of the cells to filter water passing through the cells.

Claim 8. A filtration system comprising:
a chamber that includes a hydraulic loading area divided into a plurality of cells such that each cell has a hydraulic loading area less than 2.3 square meters', and
microbeads positioned in each cell to filter water passing through the chamber.

Claim 38. A filtration system comprising:
a chamber that includes a hydraulic loading area divided into a plurality of cells with smaller hydraulic loading areas;
microbeads positioned in each cell to filter water passing through the chamber; and.
a water source positioned over the filter media within the chamber to drop water into each cell in the chamber.

The system admitted to be "**prior art**" by Applicant fails to teach a division of the hydraulic loading area into a plurality of cells with smaller hydraulic loading areas. The issue to be decided is whether it would have been obvious for one skilled in the art to modify the system admitted to be prior art by dividing the hydraulic loading area into a plurality of cells with smaller hydraulic loading areas.

Both **Greenleaf (US Patent No. 3,312,348)** and **Schulz (US Patent No. 5,032,294)** disclose filters employing individual cells. See column 3, lines 20-30 of Greenleaf and Figure 4 of Schulz. In view of these disclosures, it would have been obvious to divide the hydraulic loading area of the system described as "prior art" by

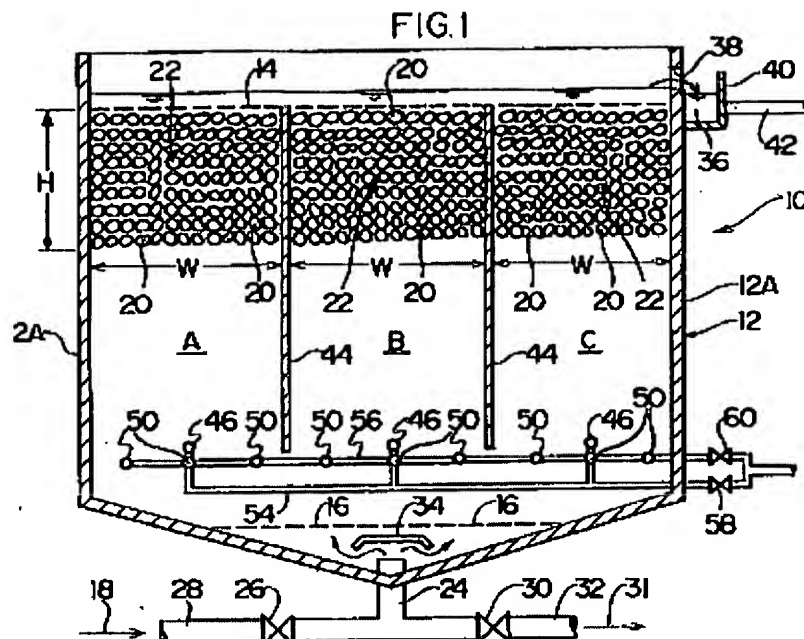
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Applicant, into a plurality of cells. Such a modification would enable those skilled in the art to keep the majority of cells online, while individual cells are taken off line for periodic backwashing, routine maintenance and/or replacement of media. These advantages would have been readily apparent to those skilled in the art who had reviewed Greenleaf. See, for example, column 1, lines 45-50 and column 2, lines 55-70 of Greenleaf.

The limitations recited in the various dependent claims, e.g., bead diameters, densities, bed depths, etc. are submitted to be inherent, or obvious in view of the references as combined above. In this regard, Applicant's admissions made during the telephonic interview of January 3, 2006, are noted.

With respect to claims 6,7,11, 37 Claim 6 and 11 specify the cells to be ***"square-shaped,"*** while claim 7 specifies ***"wherein each cell has a hydraulic loading area less than 2.3 square meters."*** And claim 37 specifies the hydraulic loading area of the chamber to be greater than 4.6 square meters. The specific shape and size of the cells, absent a showing of unexpected results and/or criticality specifically associated therewith, are design parameters that would have been routinely selected, or optimized by one skilled in the art. Moreover, it is noted that the rectangular shape of the cells disclosed by Schulz is nearly square. Some skilled in the art might even refer to the cells disclosed in Figure 4 of Schulz as being ***"squared-shaped."***

Claims **1-14** and **37-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of **AAPA (Applicant's Admitted Prior Art)** and **Funakoshi (US Patent No. 5,558,763)**. AAPA is deficient as discussed above. Funakoshi discloses baffles 44 (see Figures 1 & 10). In view of Funakoshi, it would have been obvious to divide the hydraulic loading area of the system described as "prior art" by Applicant, into a plurality of cells, for the reasons advanced by Funakoshi.



The limitations recited in the various dependent claims, e.g., bead diameters, densities, bed depths, etc. are submitted to be inherent, or obvious in view of the references as combined above. In this regard, Applicant's admissions made during the telephonic interview of January 3, 2006, are noted.

With respect to claims 6, 7, 11, 37 Claim 6 and 11 specify the cells to be **"square-shaped,"** while claim 7 specifies **"wherein each cell has a hydraulic loading area less than 2.3 square meters."** And claim 37 specifies the hydraulic loading area of the chamber to be greater than 4.6 square meters. The specific shape and size of the cells, absent a showing of unexpected results and/or criticality specifically associated therewith, are design parameters that would have been routinely selected, or optimized by one skilled in the art.

Claims 1-14 and 37-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of **AAPA (Applicant's Admitted Prior Art)** and **Junius (US Patent No. 5,558,763)**. AAPA is deficient as discussed above. Junius discloses baffles 350 (see Figure 6). In view of Junius, it would have been obvious to divide the hydraulic loading area of the system described as "prior art" by Applicant, into a plurality of cells, for the reasons advanced by Junius.

The limitations recited in the various dependent claims, e.g., bead diameters, densities, bed depths, etc. are submitted to be inherent, or obvious in view of the references as combined above. In this regard, Applicant's admissions made during the telephonic interview of January 3, 2006, are noted.

With respect to claims 6,7,11, 37 Claim 6 and 11 specify the cells to be ***"square-shaped,"*** while claim 7 specifies ***"wherein each cell has a hydraulic loading area less than 2.3 square meters."*** And claim 37 specifies the hydraulic loading area of the chamber to be greater than 4.6 square meters. The specific shape and size of the cells, absent a showing of unexpected results and/or criticality specifically associated therewith, are design parameters that would have been routinely selected, or optimized by one skilled in the art.

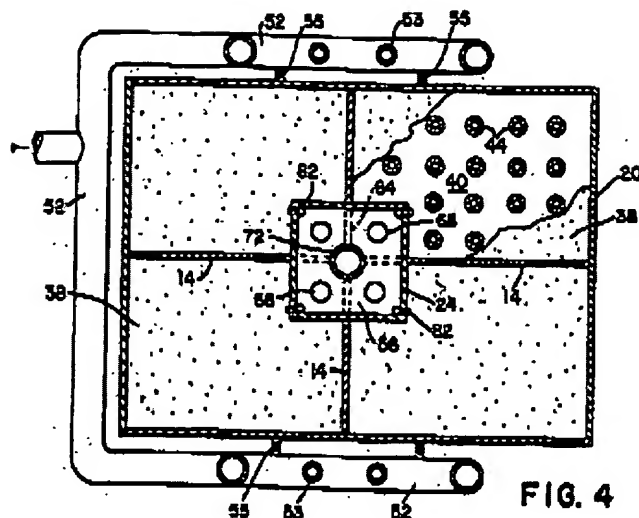
Claim Rejections - 35 USC § 102

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by **Greeleaf (US Patent No. 3,312,348)**. See column 3, lines 20-30.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by **Schulz (US Patent No. 5,032,294)**. See Figure 4.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schulz (US Patent No. 5,032,294)**. See Figure 4. Claim 6 specifies the cells to be ***"square-shaped,"*** while claim 7 specifies ***"wherein each cell has a hydraulic loading area less than 2.3 square meters."*** The specific shape and size of the cells, absent a showing of unexpected results and/or criticality specifically associated therewith, are design parameters that would have been routinely selected, or optimized by one skilled in the art. Moreover, it is noted that the rectangular shape of the cells disclosed by Schulz is nearly square. Some skilled in the art might even refer to the cells disclosed in Figure 4 of Schulz as being ***"square-shaped."***

Figure 4 of Schulz



Applicant is requested to reveal the publication date of the document cited on the PTO-892.

Response to Arguments

Applicant's arguments with respect to claims 1-14 and 37-42 and have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication should be directed to Robert J. Popovics at telephone number (571) 272-1164.

Robert James Popovics
Primary Examiner
Art Unit 1724

June 10, 2006